Minebea Co., Ltd., a Japanese Corporation
M30259US(L)

# Electric motor for a pump drive

## Patent claims

1. Electric motor for a pump drive, including a stator and a rotor for driving a pump impeller, the stator being embedded in a plastic body and the plastic body forming a chamber together with the stator in which the rotor is received, the chamber being closed at one shaft end of the rotor and the rotor being connected at the opposite second shaft end to the pump impeller.

2. Electric motor according to claim 1, wherein the plastic body is manufactured by injection molding.

3. Electric motor according to claim 1, wherein the plastic body which surrounds the stator forms a chamber closed at the first shaft end, integrally formed in one molding procedure.

4. Electric motor according to claim 1, wherein the plastic body which surrounds the stator forms a chamber open at both shaft ends which is closed with a cover at the first shaft end.

5. Electric motor according to claim 3, wherein a bearing seat for receiving a roller bearing to support the rotor is integrated in an interior wall of the chamber at the second shaft end.

6. Electric motor according to claim 4, wherein a bearing seat for receiving a roller bearing to support the rotor is integrated in an interior wall of the chamber at the second shaft end.

7. Electric motor according to claim 3, wherein the rotor is fitted on a shaft which is supported by a journal bearing at the first shaft end.

8. Electric motor according to claim 4, wherein the rotor is fitted on a shaft which is supported by a journal bearing at the first shaft end.

9. Electric motor according to claim 1, wherein the rotor is equipped with a coil flux guide connected to shaft stub ends at both shaft ends.

10. Electric motor according to claim 1, wherein the stator has a stator core and phase windings, each connected to a connection element for each phase, the plastic body surrounding the wound stator in a manner which allows only the connection element to be accessible.

11. Electric motor according to claim 8, wherein the rotor received in the chamber when operating the electrical motor in connection with a pump is immersed in the pumping medium.

12. Electric motor according to claim 8, c h a r a c t e r i z e d by an electronic module for electrical motor actuation which is located outside the chamber.

13. Electric motor according to claim 10, wherein the electronic module is separated from the pumping medium by the plastic body.

14. Electric motor according to claim 10, wherein the connection element for each phase of the electrical motor has a contact lug, and the electronic module has suitable contact lugs, these coming to rest next to the connection element contact lugs for connection thereof.

15. Electric motor according to claim 1, wherein at least part of the plastic body has metal parts integrated in it to shield the electrical motor against outside influences.

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Identification Reference List

| | |
|---|---|
| 10 | Pump housing |
| 20 | Electrical motor |
| 22 | Rotor |
| 24 | Coil flux guide, yoke |
| 26 | Permanent magnet |
| 28, 30 | Shaft stub end |
| 32 | Stator |
| 34 | Stator component |
| 36 | Phase winding |
| 38 | Plastic body |
| 40 | First shaft end |
| 42 | Second shaft end |
| 44 | Bearing seat |
| 46 | Roller bearing |
| 48 | Journal bearing sleeve |
| 50 | Magnetic disk |
| 52 | Sensor PCB |
| 54 | Electronic module |
| 56 | Buffer capacitor |
| 58 | Interference suppressor |
| 60 | FET power transistor |
| 62, 64, 64‘ | Connection pins |
| 65 | Outlet |
| 66 | Cover |
| 68, 70 | O-ring |
| 72 | Supporting component |
| 74 | O-ring |
| 80 | Plastic element |
| 82 | Cap |

| | |
|---|---|
| 84 | Screw |
| 86 | Shaft |
| 88 | Roller bearing |
| 90 | O-ring |
| 92 | Wall |
| 94 | Connecting pins |
| 96 | Plug |
| 98, 100 | PCB's |
| 102 | Metal lugs |
| 104 | Cable piece |
| 106, 108 | O-rings |
| 110 | Slot |
| 112 | Fixing agent |